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| 10/637,188      | 08/08/2003  | Farook Afsari        | ECULL-00101         | 3949             |

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| EXAMINER |
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HAGEMAN, MARK

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| ART UNIT | PAPER NUMBER |
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3653

| SHORTENED STATUTORY PERIOD OF RESPONSE | MAIL DATE  | DELIVERY MODE |
|--|------------|---------------|
| 3 MONTHS                               | 01/30/2007 | PAPER         |

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

# Office Action Summary

Application No.

10/637,188

Applicant(s)

AFSARI, FAROOK

Examiner

Mark Hageman

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 15 November 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-70 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-70 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_.

## DETAILED ACTION

### ***Continued Examination Under 37 CFR 1.114***

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 11-15-2006 has been entered.

### ***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1 – 69 are rejected under 35 U.S.C. 103(a) as being unpatentable over Christian et al. The reference discloses a plurality of sorting devices for receiving an input feed of different colored objects and sorting the different colored objects into a plurality of output feeds, wherein the plurality of sorting devices operate simultaneously, wherein at least one output feed in the plurality of output feeds is a subsequent input feed to one or more sorting devices in the plurality of sorting devices (Figs. 2 and 11) and further wherein at least one of the plurality of sorting devices sorts the different colored objects into more than two output feeds (Fig. 12; col. 7, lines 55+). Examiner acknowledges that the features are shown in different embodiments of the reference.

At the time of the invention, however, it would have been obvious to one of ordinary skill in the art to combine the different embodiments to achieve a purer sort or more groupings. For example, the apparatus of Fig. 2 could be modified by placing the apparatus of Fig 12 as the last sorter.

3. With regards to claim 2, the reference further discloses the one or more sorting devices sort the at least one subsequent input feed into a plurality of further sorted output feeds (Fig. 2).

4. With regards to claim 3, the reference further discloses a final sorting device, wherein the final sorting device sorts one or more subsequent input feeds into a plurality of final output feeds (Fig. 11).

5. With regards to claims 4, 21, 34, the reference further discloses at least one of the of output feeds contains objects of a desired color (Fig. 11).

6. With regards to claims 5, 19, 32, 45, the reference further discloses at least one of the output feeds contains undesired objects, wherein the undesired objects are directed to a rejection bin (Fig. 2).

7. With regards to claims 6, 20, 33, the reference further discloses at least one of the output feeds contains flint objects (Fig. 12). Examiner contends that the clear glass (shown in Fig. 2) inherently encompasses flint glass.

8. With regards to claim 7, the reference further inherently discloses the final sorting device directs each of the plurality of final output feeds into a plurality of corresponding storage bins (Fig 12).

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9. With regards to claims 8, 22, 36, the reference further discloses the objects are glass cullets (abstract).
10. With regards to claims 9, 23, 37, 51, 64, the reference further discloses each sorting device sorts the received different cullets based on light transmission properties of the colored cullets (col. 3, lines 1+).
11. With regards to claims 10, 24, 38, 52, 65, the reference further discloses each sorting device further comprises a light emitting source for transmitting at least one light of predetermined frequency through the glass cullet (col. 3, lines 1+).
12. With regards to claims 11, 26, 40, 53, 66, the reference further discloses each sorting device further comprises a sensor module coupled to the light emitting source and configured to receive light transmitted through the glass cullet, wherein the sorting device determines the color of the cullet from the at least one light received (col. 3, lines 1+).
13. With regards to claims 12, 25, 39, 54, 67, the reference further discloses the light emitting source includes one or more of a red light emitting diode, a green light emitting diode, a blue light emitting diode and an infrared light source (col. 3, lines 1+).
14. With regards to claim 13, 41, 55, 68 the reference further discloses at least one actuator coupled to the sensor module, wherein the at least one actuator directs the cullet to one of the output feeds depending on a signal provided by the sensor module (col. 3, lines 1+).

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15. With regards to claims 14, 27, 28, 42, 56, 69, the reference further discloses at least one actuator coupled for directing the object to one of output feeds depending on a color characteristic of the object (col. 3, lines 1+).

16. With regards to claim 15, the reference further discloses a method of effectively sorting a group of different colored objects into separate groups of similar colored objects comprising: a. receiving an input feed having a plurality of objects; and b. sorting the input feed into more than two output feeds (Fig. 12), wherein at least one output feed in the plurality of output feeds serves as a subsequent input feed, wherein sorting occurs simultaneously for the input feeds (Fig. 2). Examiner acknowledges that the features are shown in different embodiments of the reference. At the time of the invention, however, it would have been obvious to one of ordinary skill in the art to combine the different embodiments to achieve a purer sort or more groupings. For example, the apparatus of Fig. 2 could be modified by placing the apparatus of Fig 12 as the first sorter.

17. With regards to claims 16, 30, the reference further discloses further sorting the at least one subsequent input feed into a plurality of subsequent output feeds (Fig. 2).

18. With regards to claims 17, 31, the reference further discloses receiving at least one of the plurality of subsequent output feeds thereby forming a received feed and sorting the received feed into a plurality of final output feeds (Fig. 2).

19. With regards to claims 18, 35, the reference further inherently discloses directing each of the plurality of final output feeds into a corresponding container (Fig. 12).

20. With regards to claim 29, the reference further discloses a method of effectively sorting different colored objects into a plurality of groups of objects having a similar desired quality, the method comprising: a. providing a plurality of sorting devices, wherein each sorting device receives a mixture of objects of different qualities and separates the different received objects into two or more output feeds, each output feed having objects of a substantially similar quality, wherein the plurality of sorting devices operate simultaneously, further wherein at least one of the plurality of sorting devices sorts the different colored objects into more than two output feeds (Fig. 12); and b. configuring the plurality of sorting devices such that at least one output feed in each of one or more sorting devices in the plurality is input into a corresponding subsequent sorting device (Fig. 2). Examiner acknowledges that the features are shown in different embodiments of the reference. At the time of the invention, however, it would have been obvious to one of ordinary skill in the art to combine the different embodiments to achieve a purer sort or more groupings. For example, the apparatus of Fig. 2. could be modified by placing the apparatus of Fig 12 as the last sorter.

21. With regards to claim 43, the reference further discloses a multi-level sorting system for separating different colored cullets into cullets having substantially similar color characteristics comprising: a. a first means for sorting the cullets, wherein the first means for sorting directs the sorted cullets into more than two first output paths (Fig. 12); b. a second means for further sorting at least one received first output path, wherein the second means for sorting directs the further sorted cullets into more than two second output paths (Fig. 11); c. a third means for subsequently sorting at least one

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received first output path and at least one received second output path, wherein the third means for sorting directs the subsequently sorted cullets into more than two output paths, wherein the first means, the second means and the third means for sorting sort cullets simultaneously (Figs. 2, 11 and 12). Examiner acknowledges that the features are shown in different embodiments of the reference. At the time of the invention, however, it would have been obvious to one of ordinary skill in the art to combine the different embodiments to achieve a purer sort or more groupings. For example, the apparatus of Fig. 2 could be modified by placing the apparatus of Fig 12 as all the sorters. Alternatively, the apparatus of Fig. 11 could be modified by placing the apparatus of Fig 12 as all the sorters.

22. With regards to claim 44, the reference further discloses a multi-level sorting system for separating a mixed stream of colored cullets into cullets having substantially similar color characteristics comprising: a. a first stage tri-sorter for sorting the cullets, wherein the first stage tri-sorter directs the sorted cullets into a plurality of first stage output paths; b. a second stage tri-sorter coupled to the first stage tri-sorter, the second stage tri-sorter for sorting cullets in at least one received first stage output path, thereby forming a second set of sorted cullets, wherein the second stage tri-sorter directs the second set of sorted cullets into a plurality of second stage output paths; a third stage tri-sorter coupled to the first and second stage tri-sorters, the third stage tri-sorter for sorting cullets in at least one received first stage output path and at least one received second stage output path, thereby forming a third set of sorted cullets, wherein the third stage tri-sorter directs the third set of sorted cullets into a plurality of third stage output



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paths; wherein at least one of the first, second and third stage tri-sorters has more than two output paths, wherein the first tri-sorter, the second tri-sorter and the third tri-sorter sort cullets simultaneously (Figs. 2, 11 and 12). Examiner acknowledges that the features are shown in different embodiments of the reference. At the time of the invention, however, it would have been obvious to one of ordinary skill in the art to combine the different embodiments to achieve a purer sort or more groupings. For example, the apparatus of Fig. 11 could be modified by placing the apparatus of Fig 12 as all the sorters. The reference discloses a sorter with three distinct outputs (Fig. 12) and the ability to link the sorters in series and parallel paths (Figs. 2 and 11).

23. With regards to claims 45, 58, the reference further discloses cullets in one of the plurality of first output paths are sent to a rejected material bin (Fig. 2).

24. With regards to claims 46, 59, the reference further discloses cullets in one of the plurality of second output paths are sent to a rejected material bin (Fig. 11).

25. With regards to claims 47, 60, the reference further discloses cullets in one of the plurality of second output paths are sent to a high quality flint cullet bin (Fig. 2). The reference inherently discloses that the sorting can take place in a different order (col. 2, lines 50; Fig. 5)

26. With regards to claims 48, 61, the reference further discloses cullets in one of the plurality of third output paths are sent to a high quality green cullet bin (Fig. 2). The reference inherently discloses that the sorting can take place in a different order (col. 2, lines 50; Fig. 5)

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27. With regards to claims 49, 62, the reference further discloses cullets in one of the plurality of third output paths are sent to a rejected material bin (Fig. 2). The reference inherently discloses that the sorting can take place in a different order (col. 2, lines 50; Fig. 5)

28. With regards to claims 50, 63, the reference further discloses cullets in one of the plurality of third output paths are sent to a high quality brown cullet bin (Fig. 2). The reference inherently discloses that the sorting can take place in a different order (col. 2, lines 50; Fig. 5)

29. With regards to claim 57, the reference further discloses a multi-level sorting system for separating a mixed stream of colored cullets into cullets having substantially similar color characteristics comprising: a. a plurality of first stage tri-sorters for sorting the cullets, wherein the plurality of first stage tri-sorters direct the sorted cullets into a plurality of first output paths; b. a second stage tri-sorter coupled to the plurality of first stage tri-sorters, the second stage tri-sorter for sorting cullets in at least one received first output path from each first stage tri-sorter, thereby forming second sorted cullets, wherein the second stage tri-sorter directs the second sorted cullets into a plurality of second output paths; a third stage tri-sorter coupled to the plurality of first stage tri-sorters and the second stage tri-sorter, the third stage tri-sorter for sorting cullets in at least one received first output path from each of the plurality of first stage tri-sorters and at least one received second output path, thereby forming third sorted cullets, wherein the third stage tri-sorter directs the third sorted cullets into a plurality of third output paths, wherein the plurality of first tri-stage sorters, the second stage tri-sorter and the

third stage tri-sorter sort simultaneously (Fig. 2). Examiner acknowledges that the features are shown in different embodiments of the reference. At the time of the invention, however, it would have been obvious to one of ordinary skill in the art to combine the different embodiments to achieve a purer sort or more groupings. For example, the apparatus of Fig. 11 could be modified by placing the apparatus of Fig 12 as all the sorters. The reference discloses a sorter with three distinct outputs (Fig. 12) and the ability to link the sorters in series and parallel paths (Figs. 2 and 11). Examiner contends that the sorters disclosed in Fig. 2 are tri-sorters, as they can in unison sort into three groups of outputs. What is a tri-sorter? The claim does not require a tri-sorter to have three distinct outputs. Additionally, the reference discloses a sorter with three distinct outputs (Fig. 12) and the ability to link the sorters in series and parallel paths (Figs. 2 and 11).

30. Claim 70 is rejected under 35 U.S.C. 103(a) as being unpatentable over Christian in view of US 5,314,071 to Eason and in further view of US 4,583,695 to Genestie. Christian discloses first stage tri-sorter (figures 11 and 12) for sorting cullets, wherein the first stage tri-sorter directs sorted cullets into a plurality of first output paths (figure 11), a second stage tri-sorter (figure 11, sorters 2 and 3) coupled to the first stage tri-sorter, the second stage tri-sorter for sorting cullet in at least one received first output path from the first stage tri-sorter, thereby forming second sorted cullets, wherein the second stage tri-sorter directs the second sorted cullets into a plurality of output paths (figure 11). Christian also discloses supplying ambiguous material, that identified first

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as A then as B or first as B then as A, back to the beginning of the system to be resorted (c7 lines 37+ and figure 11). Christian does not explicitly disclose a plurality of first stage tri-sorters, a third stage tri-sorter, or the a light emitting source comprising one or more of a blue light emitting diode and infrared light source. Genestie discloses parallel sorting (c3 lines 63+) for the purpose of improving yields (c2 lines 13+). Eason teaches using a second sorting apparatus (10') as an alternative to returning material to the start of the system (c5 lines 5+ and c2 lines 35+) for the purpose of providing high accuracy at high throughput rates (c2 lines 54+). Eason also discloses an infrared source (c3 lines 53+) for the purpose of optimizing the spectrographic analysis for specific applications (c3 lines 50+).

It would have been obvious to one ordinary skill in the art at the time of the applicant's invention to have modified Christian, to include a plurality of first stage tri-sorters, as taught by Genestie, for the purpose of providing parallel processing and therefore improving yields. It further would have been to one ordinary skill in the art at the time of the applicant's invention to have modified Christian to include the infrared source and a third stage tri-sorter, as taught by Eason, for the purposes of optimizing the spectrographic analysis for specific applications and providing high accuracy at high throughput rates.

Examiner contends that it would be obvious to combine the tri-sorter of Christian (figure 12) with the parallel sorting of Christian (figure 11) for the purpose of sorting into more than two fractions and providing a more accurate sort. Further combination with the teachings of Eason and Genestie render the plurality of the first stage tri-sorters, the

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presence of third stage tri-sorter, and the infrared illumination source obvious, each included for the above state reasons. Furthermore examiner contends that such a system would inherently possess the claimed connections between the outputs and inputs of the various stages in order to sort the cullets accurately and efficiently into different high quality fractions.

### ***Response to Arguments***

31. Applicant's arguments filed 11-15-2006 have been fully considered but they are not persuasive. Applicant stated that there is no motivation to combine various embodiments of Christian. Examiner disagrees and maintains that there is motivation to combine various embodiments. Motivation to combine the parallel sorting embodiment (figure 11) being providing a more thorough and accurate sort and motivation for the combining the triple output sorter (figure 12) being the capability to sort into more than two fractions in one step. Applicant further stated that, "Christian does not teach simultaneously sorting the cullets with a plurality of sorters." Examiner disagrees and maintains that both figures 2 and 11 show a plurality of sorters, which are operating simultaneously to sort cullets.

### ***Conclusion***


The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mark Hageman whose telephone number is (571) 272-3027. The examiner can normally be reached on M-F 7:30-4:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Mackey can be reached on (571) 272-6916. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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